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AN AIR-PRESSURE TANK FOR USE IN THE FIELD APPLICATION OF LIQUID SPRAYS

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The equipment and apparatus herein described meet a long-felt need for conserving energy and time formerly expended in the hand pumping of compressed-air sprayers used to apply a large number of liquid sprays in field tests against the onion thrips and the gladiolus thrips. For these tests, sprayers with a tank capacity of 1½ gallons have heretofore been pumped by hand to about 60 pounds of pressure. With this apparatus, a series of field treatments is applied in a single day with less effort than was formerly required to do the work by hand over a 2-day period.

The equipment includes an air-compressor unit of standard make provided with a 1/4-horsepower motor and an automatic cut-off belted to a compressor, all mounted on an air-storage tank about 13 inches in diameter and 30 inches long. (Fig. 1.) An attached air hose is provided with a pressure gauge and a standard valve fitting such as is used for inflating tires at gasoline stations. (Fig. 2.) A valve stem from an inner tube has been welded into the side of each spray tank near the upper end and just to the left of the carrying handle or strap attachment. (Fig. 3.) In this location it is above the level of the liquid in the tanks and is not in the way of the operator when he is carrying the sprayer in a horizontal position. After the spray material has been placed in the tank and the pumping mechanism has been screwed into place, the air pressure is built up to the desired point by applying the air hose and checking with the pressure gauge. (Fig. 4.)

The compressor unit as mounted on skids (fig. 1) weighs about 165 pounds. It can be lifted into a truck by two men and taken to the field. The tank, having a volume of about 2.3 cubic feet and with an initial pressure of 160 pounds, is of sufficient capacity for applying 25 to 30 treatments with the spray equipment described above. The pressure can be restored in about 20 minutes by driving the truck to within reach of an electric outlet and plugging in the motor-compressor. The unit has also been mounted on a two-wheeled chassis provided with motorcycle wheels (fig. 4) for moving the unit to various points near the laboratory.

At laboratories lacking a compressor unit, it would seem practical to utilize an air tank, fitted with an air valve from an inner tube, which could be filled to the desired pressure at a gasoline station. It should be equipped with a short length of air hose and an air-valve fitting for filling the spray tanks with compressed air. A standard hand gauge, as used for automobile tires, could be employed for checking the pressure if a gauge in the hose line, as described in the above equipment, is unavailable.

Dr. Neale F. Howard suggested that an attachment to replace a spark plug on an automobile may be purchased for a relatively small sum and would serve in lieu of an air compressor. This device would naturally be slower in building up the desired pressure.

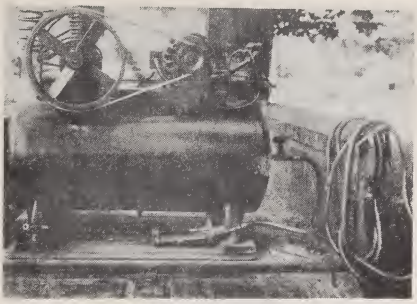

Figure 1.--Air-compressor unit on skids as transported in a truck.

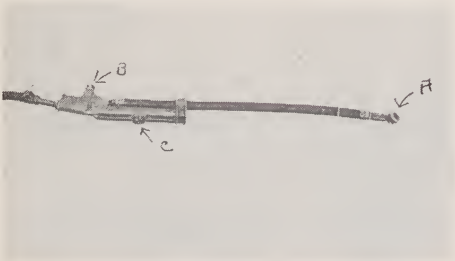

Figure 2.--Air-hose attachment with valve fitting (A) and control valve (B) for checking pressure-gauge (C) reading.

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Figure 3.--Compressed-air spray tank with an inner tube valve located in the side just above the carrying handle.

Figure 4.--Air-compressor unit mounted on a chassis of a two-wheeled cart. Operator building up pressure in the spray tank.

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